

REMARKS

I. STATUS OF APPLICATION

Claims 1-58 are pending in the present application. Claims 3, 5-29, 32, and 34-58 stand withdrawn from consideration pursuant to the Requirement for Election of Species of 28 February 2006. Thus, claims 1, 2, 4, 30, 31, and 33 are considered in the present Office Action. No claims are amended, canceled, or added in this paper.

Claims 1, 2, 4, 30, 31, and 33 stand rejected under 35 USC § 103(a), as being unpatentable over U.S. Patent 5,961,466 to Anbar ("Anbar").

II. 35 USC § 103 REJECTIONS

Claims 1, 2, 4, 30, 31, and 33 stand rejected under 35 USC § 103(a), as being unpatentable over Anbar. Applicant respectfully traverses the rejection because Anbar fails to teach the claimed invention and the prior art fails to provide sufficient motivation for a person having ordinary skill in the art at the time of the invention to modify Anbar to arrive at the present invention. Moreover, the prior art fails to provide a person having ordinary skill in the art at the time of the invention a reasonable expectation of success, even if Anbar were so modified.

A. CLAIMS 1, 2 AND 4 ARE ALLOWABLE OVER ANBAR

Claim 1 recites:

*recording first and **second series** of infrared images of a predetermined area of tissue, the first and second series of infrared images recorded in respective **first and second bands of infrared wavelengths**, the second band of infrared wavelengths **different** from the first band of infrared wavelengths;*

*converting the **first and second** series of infrared images into corresponding first and second series of thermal images having a plurality of subareas;*

determining a first plurality of average temperature values for each of the plurality of subareas, each of the first plurality of average temperature values for each of the plurality of subareas determined from a corresponding one of the first series of thermal images;

determining a first average temperature using the first plurality of average temperature values;

*determining a **second** plurality of average temperature values for each of the plurality of subareas, each of the second plurality of average temperature values for each of the plurality of subareas determined from a corresponding one of the second series of thermal images;*

*determining a **second** average temperature using the second plurality of average temperature values; and*

*analyzing the first and **second** pluralities of average temperature values for each of the plurality of subareas,*

wherein when a spatial distribution of the first plurality of average temperature values corresponding to a cluster comprising at least six adjacent subareas is less than about 20% or more than about 100% of the first average temperature, tissue corresponding to the cluster is preliminarily determined to be diseased, and

*wherein when the tissue corresponding to the cluster is preliminarily determined to be diseased and when a spatial distribution of the **second** plurality of average temperature values corresponding to the cluster is less than about 20% or more than about 100% of the **second** average temperature, tissue corresponding to the cluster is confirmed to be diseased.*

(emphasis added). The Office acknowledges on the record that “Anbar does not disclose the method of using a first and second serious [sic] of infrared images in the exact same method as described above [in the Detailed Action].”¹ However, the Office alleges that the invention set forth in claim 1 is obvious over Anbar because Anbar

¹ Detailed Action, p. 3, ll. 12-13.

discloses "comparing results from two procedures to increase the certainty of the results and diagnosis", citing column 6, lines 19-21 of Anbar.²

The cited portion of Anbar states "[a] match between the findings of procedure A and B increases the diagnostic certainty of the detection method of the present invention." "Procedure A," as taught by Anbar, is a computer algorithm that uses average temperature values and/or standard deviations of the average temperature values of small areas of skin to determine whether the imaged breast is cancerous.³ "Procedure B," as disclosed by Anbar, is a computer algorithm that uses the spatial homogeneity of skin temperature (*i.e.*, "HST") of small areas of skin to determine whether the imaged breast is cancerous.⁴ The spatial homogeneity of skin temperature is computed by dividing the average skin temperature by the standard deviation of the skin temperature.⁵ Anbar arrives at the average temperature values and the standard deviations of the average temperature values from one or more series of thermal images acquired of the breast. While these series of thermal images may be separated in time, they are substantially the same. In fact, it is desirable that they be the same, so that the computations are performed on the same small area or areas of skin in each of the procedures (*i.e.*, "procedure A" and "procedure B").

Thus, Anbar merely teaches using thermal image data for a small area of skin of a breast as input data for two different calculations. "A match between the findings of procedure A and B increases the diagnostic certainty of the detection method of

² Detailed Action, p. 3, ll. 13-20.

³ Anbar, col. 4, l. 42, through col. 5, l. 37.

⁴ Anbar, col. 5, l. 38, through col. 6, l. 18.

⁵ Anbar, col. 1, ll. 60-61.

[Anbar].⁶ Several questions remain. Given Anbar's teachings, would it have been obvious to a person having ordinary skill in the art at the time of the invention to record two series of infrared images in different wavelengths? Moreover, even if two series of infrared images were recorded, would it have been obvious to a person having ordinary skill in the art at the time of the invention to preliminarily determine the tissue to be diseased if the data obtained from the first infrared wavelength band images met certain criteria and to confirm the tissue to be diseased if the data obtained from the second infrared wavelength band images met certain criteria, given Anbar's teachings? The answer to each of these questions must be no. Applicant respectfully asserts that a person having ordinary skill in the art at the time of the invention would not have appreciated the claimed invention to be obvious in light of Anbar because a teaching of performing different calculations would not lead a person having ordinary skill in the art at the time of the invention to use two thermal images in different infrared wavelengths.

As the Examiner well knows, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. ***Anbar, however, is silent with regard to any specific infrared wavelength or wavelengths and, thus, cannot provide any such motivation. If Anbar cannot provide the motivation, then from where does the motivation come? Applicant respectfully asserts that it impermissibly comes from Applicant's disclosure via hindsight.***

⁶ Anbar, col. 6, ll. 19-21.

Second, there must be a reasonable expectation of success. ***Applicant fails to appreciate, given the teaching of Anbar, how a person having ordinary skill in the art at the time of the invention would have expected success, even if Anbar were modified as suggested by the Office.***

Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. ***By the Office's own admission, Anbar fails to teach all of the limitations of claim 1. Anbar cannot suggest using thermal images in different wavelengths merely by disclosing a method wherein different calculations are performed on data resulting from thermal images.***

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure.⁷ Moreover, all the claim limitations must be taught or suggested by the prior art.⁸ ***It is respectfully submitted that any attempt to assert that Anbar suggests the claimed invention as a whole is necessarily based on an improper use of hindsight using Applicant's disclosure as a roadmap.***

With respect to alleged obviousness, there must be something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the modification.⁹ The mere fact that the prior art can be combined or modified does not make the resultant combination obvious unless the prior art also suggests the desirability of the combination.¹⁰ ***Anbar cannot suggest the desirability of employing two infrared wavelengths when it is silent with regard to any particular infrared***

⁷ *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142.

⁸ *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974).

wavelength. The consistent criterion for determining obviousness is whether the prior art would have suggested to one of ordinary skill in the art that the process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art. Both the suggestion and the expectation of success must be founded in the prior art, not in the Applicant's disclosure.¹¹ ***Anbar provides no such suggestion or expectation of success.***

The Federal Circuit has made it crystal clear that, in an obviousness situation, the prior art must disclose each and every element of the claimed invention, and that any motivation to combine or modify the prior art must be based upon a suggestion in the prior art.¹² ***The Office has admitted on the record that Anbar fails to disclose all of the limitations of claim 1.***

If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious.¹³ Claims 2 and 4 depend from independent claim 1. Accordingly, claims 2 and 4 are allowable over Anbar for at least the same reasons set forth above concerning claim 1.

B. CLAIM 2 IS SEPARATELY ALLOWABLE OVER ANBAR

Claim 2 recites:

determining a first contributing frequency of the first plurality of average temperature values for each of the plurality of subareas using the first series of thermal images;

⁹ *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561 (Fed. Cir. 1986).

¹⁰ *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990); M.P.E.P. § 2143.01.

¹¹ *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); *In re O'Farrell*, 853 F.2d 894 (Fed. Cir. 1988); M.P.E.P. § 2142.

¹² *In re Lee*, 61 U.S.P.Q.2d 1430 (Fed. Cir. 2002).

¹³ *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); M.P.E.P. § 2143.03.

*determining **first** lower and upper threshold frequencies using the first contributing frequency of each of the subareas;*

*determining a **second** contributing frequency of the second plurality of average temperature values for each of the plurality of subareas using the second series of thermal images; and*

*determining **second** lower and upper threshold frequencies using the second contributing frequency of each of the subareas,*

*wherein when a spatial distribution of **first** contributing frequencies of the cluster is less than the **first** lower threshold frequency or more than the **first** upper threshold frequency, tissue corresponding to the cluster is preliminarily determined to be diseased, and*

*wherein when tissue corresponding to the cluster is preliminarily determined to be diseased and when a spatial distribution of **second** contributing frequencies of the cluster is less than the **second** lower threshold frequency or more than the **second** upper threshold frequency, tissue corresponding to the cluster is confirmed to be diseased*

(emphasis added).

The Office asserts that "it would have been obvious for Anbar to perform the method discussed using a first and second set of contributing frequencies and following through with said method for the reason provided above,"¹⁴ which is because "Anbar does further disclose comparing results from two procedures to increase the certainty of the results and diagnosis."¹⁵

If Anbar fails to disclose, suggest, or even suggest the desirability of two infrared images in two different infrared wavelengths, Anbar simply cannot disclose, suggest, or suggest the desirability of:

*determining a **second** contributing frequency of the second plurality of average temperature values for each of the plurality of subareas using the **second** series of thermal images;*

¹⁴ Detailed Action, p. 4, ll. 14-16.

¹⁵ Detailed Action, p. 3, ll. 13-14.

*determining **second** lower and upper threshold frequencies using the second contributing frequency of each of the subareas, or*

*when a spatial distribution of **second** contributing frequencies of the cluster is less than the **second** lower threshold frequency or more than the **second** upper threshold frequency, tissue corresponding to the cluster is confirmed to be diseased*

(emphasis added), as required by claim 2. The Office is reminded that the prior art must disclose each and every element of the claimed invention, and that any motivation to combine or modify the prior art must be based upon a suggestion in the prior art.¹⁶ Anbar simply fails this standard.

For at least this additional reason, claim 2 is allowable over Anbar. It is, therefore, respectfully requested that the rejection of claim 2 under 35 USC § 103(a), as being unpatentable over Anbar, be reconsidered and withdrawn.

C. CLAIM 4 IS SEPARATELY ALLOWABLE OVER ANBAR

Claim 4 requires “analyzing the first and second pluralities of average temperature values for each of the plurality of subareas using a fast Fourier transform analysis.” If Anbar fails to disclose, suggest, or even suggest the desirability of two infrared images in two different infrared wavelengths, Anbar simply cannot disclose, suggest, or suggest the desirability of “analyzing the first and second pluralities of average temperature values for each of the plurality of subareas using a fast Fourier transform analysis,” as required by claim 4. The Office is reminded that the prior art must disclose each and every element of the claimed invention, and that any motivation to combine or modify

¹⁶ *In re Lee*, 61 U.S.P.Q.2d 1430 (Fed. Cir. 2002).

the prior art must be based upon a suggestion in the prior art.¹⁷ Anbar simply fails this standard.

For at least this additional reason, claim 4 is allowable over Anbar. It is, therefore, respectfully requested that the rejection of claim 4 under 35 USC § 103(a), as being unpatentable over Anbar, be reconsidered and withdrawn.

D. CLAIMS 30, 31, AND 33 ARE ALLOWABLE OVER ANBAR

Claim 30 recites:

*an imager for recording first and **second** series of infrared images of a predetermined area of tissue, the first and **second** series of infrared images recorded in respective first and **second bands of infrared wavelengths**, the **second band of infrared wavelengths different from the first band of infrared wavelengths**;*

*a converter for converting the first and **second** series of infrared images into corresponding first and **second** series of thermal images having a plurality of subareas;*

*an averager for determining a first plurality of average temperature values for each of the plurality of subareas, each of the first plurality of average temperature values for each of the plurality of subareas determined from a corresponding one of the first series of thermal images, the averager for determining a first average temperature using the first plurality of average temperature values, the averager for determining a **second** plurality of average temperature values for each of the plurality of subareas, each of the **second** plurality of average temperature values for each of the plurality of subareas determined from a corresponding one of the **second** series of thermal images, and the averager for determining a **second** average temperature using the **second** plurality of average temperature values; and*

*an analyzer for analyzing the first and **second** pluralities of average temperature values for each of the plurality of subareas,*

wherein when a spatial distribution of the first plurality of average temperature values corresponding to a cluster comprising at least six

¹⁷ *In re Lee*, 61 U.S.P.Q.2d 1430 (Fed. Cir. 2002).

adjacent subareas is less than about 20% or more than about 100% of the first average temperature, tissue corresponding to the cluster is preliminarily determined to be diseased, and

*wherein when the tissue corresponding to the cluster is preliminarily determined to be diseased and when a spatial distribution of the **second** plurality of average temperature values corresponding to the cluster is less than about 20% or more than about 100% of the **second** average temperature, tissue corresponding to the cluster is confirmed to be diseased.*

(emphasis added). The Office alleges that "the method disclosed above [in the Detailed Action] by Anbar inherently includes an apparatus to practice such method comprising of an imager, a converter, an averager, an analyzer, and a frequency analyzer."¹⁸

"To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' "¹⁹ For Anbar's method to be even remotely considered as inherently disclosing the claimed imager, Anbar would have to at least disclose recording thermal images in two different infrared wavelengths. ***By the Office's own admission, Anbar does not disclose recording thermal images in two different wavelengths.***²⁰ The Office merely alleges that it would have been obvious for a person having ordinary skill in the art at the time of the invention to employ a first and second series of images. ***Anbar's method does not necessarily have to be carried out by an imager that can record images in first and second bands of***

¹⁸ Detailed Action, p. 5, ll. 1-3.

¹⁹ MPEP 2112, citing *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted).

²⁰ Detailed Action, p. 3, ll. 12-13.

infrared wavelengths, such that the second band of infrared wavelengths is different from the first band of infrared wavelengths. Why would Anbar's method need to be carried out by such an imager, when Anbar is silent with regard to any particular desired infrared wavelength? Applicant respectfully asserts that it would not. Rather, Anbar provides no suggestion that such an imager would be even remotely desirable. For at least these reasons, the present invention, as set forth in claim 30, is allowable over Anbar.

Claims 31 and 33 depend from claim 31. Accordingly, the remarks provided *supra* concerning claim 30 apply equally to claims 31 and 33.

For at least these reasons, it is respectfully requested that the rejection of claims 30, 31, and 33 under 35 USC § 103(a), as being unpatentable over Anbar, be reconsidered and withdrawn.

E. CLAIMS 31 AND 33 ARE SEPARATELY ALLOWABLE OVER ANBAR

Claims 31 and 33 are allowable over Anbar for at least the reasons set forth above concerning claims 2 and 4. Specifically, the prior art fails to disclose all of the limitations of claims 31 and 33. For at least these reasons, it is respectfully requested that the rejection of claims 31 and 33 be reconsidered and withdrawn.

CONCLUSION

Wherefore, in view of the foregoing remarks, this application is considered to be in condition for allowance, and an early reconsideration and issuance of a Notice of Allowance are earnestly solicited. The Examiner is invited to contact the undersigned at (817) 578-8616 with any questions, comments, or suggestions relating to the referenced patent application.

Respectfully submitted,

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